

## Section 1004

### SUMMARY

The majority of this LCC procedure is based on the "Life Cycle Cost Analysis of Pavements" compiled by Dale E. Peterson for the National Cooperative Highway Research Program Synthesis of Highway Practice for the Highway Research Board, National Research Council. Most of the references used in this procedure were taken from Peterson's report.

#### 1004.01 Conclusions

- (1) The use of LCC procedures to analyze new design alternatives is a proven and acceptable procedure.
- (2) The process also applies in selecting pavement rehabilitation alternatives.

#### 1004.02 Recommendations

The following procedural steps apply when selecting between alternatives for new or rehabilitated pavements.

- (1) Determine the site characteristic and other input data that may influence the pavement design or the rehabilitation design. In rehabilitation planning, include a detailed evaluation of the existing pavement.
- (2) Identify various pavement management strategies that might be used to achieve the final requirements for the project.
- (3) In all situations, identify all feasible alternatives satisfying project needs. Alternatives should provide the required structural service life for the analysis period. Use the creative techniques, particularly brainstorming, as previously identified, to generate alternatives.
- (4) Remove from further consideration any item or items common to all alternatives.
- (5) Select the analysis period. For new pavement construction, use 25 to 40 years. For rehabilitation projects, use a time comparable to the time until major reconstruction or replacement.
- (6) Select a suitable discount rate. While a four percent rate is recommended, select a rate based on guidance provided by the Value Engineer.
- (7) Determine time intervals for future maintenance and rehabilitation activities in order to predict performance characteristics of alternatives.
- (8) Estimate costs for each alternative, including future costs and as appropriate, user costs.
- (9) Calculate present worth or annualized costs for each alternative.

- (10) Items or factors subject to variation require a sensitivity analysis to ensure selection of the proper alternative.
- (11) Evaluate alternatives against potentially overriding factors. Use AASHTO's "An Informational Guide to Project Procedures."
- (12) Considering all evaluated factors, select the most promising or preferred new pavement or rehabilitation design.